Journal of Physics Condensed Matter 2003 vol.15 N28, pages S2231-S2235

On the hyperfine interaction in rare-earth Van Vleck paramagnets at high magnetic fields

Tayurskii D., Suzuki H.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

The influence of high magnetic fields on the hyperfine interaction in rare-earth ions with a non-magnetic ground state (Van Vleck ions) is investigated theoretically for the case of Tm3+ ions in an axially symmetrical crystal electric field (in an ethylsulphate crystal). It is shown that magnetic-field-induced distortions of the 4f-electron shell lead to crucial changes in the hyperfine magnetic field at the nucleus. The proposed theoretical model is in agreement with recent experimental data.

http://dx.doi.org/10.1088/0953-8984/15/28/358